RESEARCH PAPER | Medical Science | Volume : 3 | Issue : 7 | July 2013 | ISSN - 2249-555X

Digital gangrene- A rare complication of dopamine therapy

KEYWORDS: Dopamine, digital gangrene, high dose

Dr Sanjiv V Choudhary
Associate professor, Department of Dermatology, Department of Dermatology, Jawaharlal Nehru Medical College, Sawangi, Wardha, [M.S], India

Dr Nupur P. Maheshwari
Junior Resident - 3, Department of Dermatology, Department of Dermatology, Jawaharlal Nehru Medical College, Sawangi, Wardha, [M.S], India

ABSTRACT *We are describing a 65 years old female patient, referred from gynaecology department, having multiple uterine fibroid who developed hypovolemic shock during intraoperative period of explorative laprotomy. Patient did not respond to plasma volume expanders. To save her life, dopamine was used by anesthetist in high dose (46mcg/kg/min) with injection noradrenaline 8mg in 50ml@15ml/hr. Patient recovered gradually from shock state but developed inevitable complication of digital gangrene with such high dose, which has reported rarely in literature.*

Introduction:-
Dopamine is a vasopressor agent frequently used in management of cardiogenic and septic shock. When dopamine is used in low doses (2-5 mcg/kg/min), it brings about vasodilatation in the renal and mesenteric vascular beds. In moderate doses (10-20 mcg/kg/min) dopamine enhances cardiac contractibility and higher doses (20-50 mcg/kg/min) may also cause vasoconstriction [1].

Dopamine is associated with severe peripheral ischaemia leading to gangrenous changes when used for prolonged duration and at high perfusion rate (20-50 mcg/kg/min- vasoconstrictive dose). But, there were reports of low dose dopamine causing tissue necrosis and digital gangrene [2] [3] [4].

Gangrene complicating low dose dopamine therapy suggests either an idiosyncratic response to the drug or multifactorial causes of ischaemia and necrosis like hypercoagulable state of DIC, underlying atherosclerotic peripheral vascular disease and diabetic microangiopathy.

Digital gangrene is considered to be one of the rare complications of dopamine [5].

Case report:-
A 65 years old female patient, weighing 45kgs, having multiple uterine fibroid was posted for exploratory laprotomy. Patient was referred from Gynecology department for skin lesions over right hand fingers. During intraoperative period, due to multiple adhesions, there was profuse bleeding leading to hypovolemic shock (blood pressure- 60/20 mm of hg). Due to this intraoperative complication she was immediately given injection dopamine 400mg in 50ml@15ml/hr i.e 46mcg/kg/min, injection Noradrenaline 8mg in 50ml@15ml/hr along with calcium gluconate 10cc and injection vitamin K by anesthetist. She was also transfused with whole blood, fresh frozen plasma, platelets and RBC's. The patient was monitored for post operative complications. Dopamine and Noradrenaline were tapered off over 12-14hours.

The patient was stable after 24 hours and was shifted to surgical ICU. During post operative period, patient's right hand fingers were observed to be cold and dusky which over few days developed dry gangrene [Fig 1, 2]. Amputation of gangrenous digits was advised by surgeons.

Discussion:-
There were reports of peripheral gangrene with dopamine when used with high dose (> 20 mcg/kg/min) [1] [6]. In our case also dopamine was used with high dose (46 mcg/kg/min) which is inappropriate in hypovolemic shock state. But during intraoperative period of hypovolemic shock, patient did not respond to plasma volume expanders and her blood pressure was constantly recorded at critically lower side. Intraoperative bleeding due to extensive adhesion was not anticipated pre operatively. Although high dose of dopamine with Noradrenaline was not appropriate to treat her shock state but to save the life of patient this was attempted.

This case is reported to highlight digital gangrene as a complication of dopamine if not used within therapeutic range. In our case, Noradrenaline might be a contributory factor for peripheral digital gangrene.

Fig- 1

Fig- 2

REFERENCE 1. Hoffman BB, Lefkowitz RJ. Catecholamines and sympathomimetic drugs. In Gilman AG, Rall TW, Niles AS, eds. Goodman and Gilman's the Pharmological Basis of Therapeutics New York: Pergamon Press 1991:200-1.|2. Kaul S, Sarela A, Supe A N, Karnard D R. Gangrene complicating dopamine therapy. J R Soc Med1997; 90:80.|3. Yovchevski P, Markov G, Kirov G, Boneva Z. Digital necrosis after low dose dopamine treatment. NDT Plus 2008; 3:186.|4. Winkler MJ, Trunkey DD. Dopamine gangrene. Association with disemminated intravascular coagulation. Am J Surg 1981; 142:588-91.|5 Prabhu M M, Prabhu S M, Mishra P, Palaian S. Digital gangrene due to dopamine infusion- a case report. J Pak Assoc Derma 2005; 15: 197-199.|6. Colak T, Erdogan O, Yerebakan O, Arici C, Gurkan A. Symmetrical peripheral gangrene and dopamine. TJTES 2003; 9:222-4.